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JOHN R. MOHLER, Chief of Bureau.

OAK POISONING OF LIVE STOCK.

By C. DWIGHT MARSH, *Physiologist in Charge of Poisonous Plant Investigations*,
A. B. CLAWSON, *Physiologist*, and HADLEIGH MARSH, *Veterinary Inspector*,
Pathological Division.

PREVALENCE.

For some years there have been reports of poisoning of live stock by oak leaves on the western stock ranges. These reports have come mostly from Colorado, Utah, Texas, and New Mexico.

In the mountains of Utah there is a very distinct oak zone between the altitudes of 5,500 and 8,000 feet, in which the species known as *Quercus gambellii* is the principal form of vegetation. When the cattle go to the summer range they graze through this zone at the time when the young leaves of the oak are appearing, and again late in summer they frequently come down from the higher ranges and stay in the oak zone, eating largely of the leaves. It is generally said that most of the cases of so-called oak poisoning occur in the spring, when the animals are eating the buds and young leaves.

In Texas and New Mexico cattle are said to be poisoned by the "shinnery" oak, *Quercus havardi*, in the early spring. In the Texas shinnery country the cattle are kept in pastures where the vegetation consists mainly of shinnery, mesquite, bear grass (*Nolina*), sage, grama grass, and a few weeds. Of these plants the shinnery is the first to begin growing early in the spring.

Reports from stockmen in regard to oak poisoning have been somewhat contradictory, and the matter has been made a subject of special investigation for the last three years with the field experimental work in Utah and Texas. The subject has proved to be one of considerable difficulty, requiring many experimental feedings. While there are still some doubtful points, it is considered that the work is now fairly complete from the practical side, and a technical report is in preparation. Inasmuch as it may be some time before this technical report appears, and as it is important that stockmen should have all available information as soon as possible in order to reduce their losses, it has seemed wise to issue a concise preliminary paper giving the main results of the investigation.

ANIMALS POISONED.

The losses from oak in America seem to be confined to cattle, although there have been unconfirmed reports of the poisoning of sheep. No cases of the poisoning of horses are known.

OAK THE CAUSE OF THE TROUBLE.

It has been definitely proved that the cause of this illness is the oak. This has been shown experimentally in Utah and Texas, and doubtless would be equally true for other localities.

In Utah the usual time for the cases to occur is in the spring when the cattle are driven to the summer range. They frequently pass into the oak zone so early that the grass has not started, so that there is little for them to eat except the oak. Many of the animals have come from dry feed, are greedy for green material, and naturally eat largely of the young oak leaves. Similar conditions obtain in Texas. At the time when the shinnery oak begins to put out leaves there is practically nothing else on the range for the cattle to eat, and by necessity they devote themselves to it. It has been shown by observation that they do not eat shinnery by preference, but will take grass more readily if any is to be found.

OAK NOT NECESSARILY INJURIOUS.

While it has been shown that illness may result from eating oak brush, it does not follow in all cases. The number of cases of sickness is comparatively small, although in some localities in the early spring oak leaves are about all that the animal can get to eat. In the shinnery country the annual loss is estimated at 3 per cent, which indicates that comparatively few of the cattle suffer from their oak diet. If the animals feed exclusively or nearly exclusively on oak, some of them may be affected, but many will go through the season with no serious harm. It has been found experimentally that if a small quantity of hay is added to the daily ration, no harm results from the oak feeding. With a certain quantity of other material oak may be considered as good forage. As a matter of fact, cattle in Utah frequently come off the oak ranges in the fall in fine condition.

SYMPTOMS.

Perhaps the most noticeable symptom is the extreme constipation. The feces are passed infrequently, are dark and hard, consisting at times largely of mucus, and sometimes are bloody. This condition of constipation may be followed by diarrhea.

The animal becomes gaunt, its coat rough, its nose dry and cracked. The attitude is peculiar, the head being extended forward. Appetite

is lost and weakness increases until the case is ended by death. The temperature and respiration are normal.

These symptoms appear after rather prolonged feeding upon the oak, not less than about a week. The animals may die in two weeks or they may linger for an indefinite period.

In the autopsies the congested condition of the interior of the intestine and sometimes of the fourth stomach is most noticeable.

TREATMENT OF OAK CASES.

From the fact that oak cases are constipated, it is evident that any treatment relieving this condition would be helpful. Epsom salt might be used in pound doses, or it could be given in the water, in small quantities, in localities where the cattle are watered at wells.

It is evident, however, from what has been said, that the sensible thing is to prevent trouble by proper feeding. If cattle are turned upon an oak range when there is little other vegetation, some loss must be expected. There is no doubt that in some localities cattle are admitted to the summer range too early. In such cases it would be more profitable, in the end, to feed a little longer and use the range only after the grasses have had a fair start. The exact time when this should be done can not be determined in advance but should be fixed each year after an actual examination of the range.

If cattle are confined in pastures containing oak, care should be taken that the diet is not exclusively oak. It has been found that as small a quantity as 3 pounds of alfalfa hay daily, with the oak, will provide a maintenance ration for a 2-year-old steer.

